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## A comparative study of anthropometric variables of female softball players with non-softball players

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### Abstract

To fulfill the purpose of these study total sixty girls between the age group of 18-20 years were selected as subjects for the study. Out of these 30 girls was Softball players, who participated at College level competition and other thirty girls were Non-players, who never took active part in any event or game at any age level. The purpose of the study was to compare the anthropometric variables of Softball players and Non-Softball players.

Various body measurement including linear diameters, circumferences and skin folds were taken by following standard technique of Tanner *et al* (1969). Somototype were assessed with the help of Health and Carter method (1967). Percentage of body fat was estimated by applying the equation of Slaughter *et al*. (1980). Means, standard deviation and independent student 't' test were used as statistical tools.

It was found that Softball players were slightly heavier and taller than the Non-Softball players, however the differences were Non-significant. They also posses significantly low rating of Endomorphy and waist circumference than Non-Softball players. Results of this study depicted that rural Non-Softball players being physically active did not differentiate much than the Softball players.

**Keywords:** Competition, anthropometric, Endomorphy, Somototype, skin folds

### Introduction

The role of body structure in the performance has undoubtedly been established by many researchers (Kroll -1954, Grewal and Sidhu -1984, Singh and Kaur -2008) [2, 5]. It is understood that physique, body composition, physical growth and one's motor development are of fundamental importance in developing the criteria of talent selection in Sports. The field of Anthropometry is dealing with the study of measurements of the human body and has an immense effect on the performance of the sportsperson in any aspect of games and sports. The Anthropometric variables were such as linear diameters, circumferences and skin folds.

The morphological characteristics, as a component of the anthropometric status, comprise a biologic and physiologic basis that elicits the exposition of anthropometric measures. By factor-influenced procedures, they can transform into latent morphological dimensions. Information regarding body constitution can be a relevant indicator of an individual's health status, and can serve in evaluation of their rate of growth and development, which is shown by Popovic in his research (2008). According to Mišigoj Duraković (2008), anthropometric measures are the standpoint for planning certain training programs as well as increasing the level of anthropometric measures, and they are determined by anthropometry.

In this present study attempt has been made to examine the Anthropometric Variables of Softball girl players and Non-Softball players.

### Material and methods

The sample for the present study was drawn from various rural schools of district Hoshiarpur and Ludhiana in Punjab through random sampling. A total 60 girls between the age group of 18-20 years were selected. Out of these 30 girls was Softball playing girls, who participated at School level competition and others thirty girls were Non-sports, who never took active part in any event or game at any age level. Various body measurements including linear diameters, circumferences and skin folds were taken by following the standard technique of Tanner *et al* (1969).

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Somatotype were assessed with the help of Health and Carter method (1967). Percentage of body fat was estimated by applying the equation of slaughter *et al* (1980). The Mean, standard deviation and independent student 't' test were used as statistical tools.

### Results and Discussion

Table 1 shows the distribution of mean values and standard deviations of different anthropometric measurements and body composition among the Softball girls and Non-sports girls aged 18-20 years, Softball players were heavier and taller than Non-Softball girls but the difference was statistically Non significant. By comparing the body diameter it was observed that Softball playing girls have slightly greater girth at all diameter but the significant difference ( $P<0.01$ ) was only observed in femur diameter.

The waist circumferences of Non-Softball players were found to be larger than Softball players with significant difference at 0.01 level of significant. Rest all the circumference did not show much difference. Softball playing girls possessed lesser values of skin folds thickness at various site than Non-Softball girls.

Significant difference ( $P<0.05$ ) was only observed in Suprailliac skin fold. It is interesting to observe that Softball playing girls on the average possessed less body fat percentage (18.91%) than Non Softball girls (19.26%). The student's 't' test further confirms statistically Non significant difference between mean of two groups. Consequently Softball players are leaner having greater lean body mass (81.05%) than their counterparts (80.69%), however the difference is Non Significant.

**Table 1:** Descriptive Statistics of Various Anthropometric and Body Composition variables in Softball players with Non-Softball players aged 18-20 Yrs.

Variables	Softball Players N=30		Non-Softball Players N=30		't' Value
	M	SD	M	SD	
Age (year)	17.80	1.76	18.00	.65	.77
Weight (kg)	54.08	5.15	52.58	5.25	1.99
Height (cm)	162.03	5.28	160.03	4.41	1.87
Bacromial Diameter (cm)	37.00	1.42	36.33	1.25	1.82
Bicristal Diameter (cm)	30.27	1.46	29.94	2.17	1.60
Humerus diameter (cm)	6.23	0.30	6.09	.19	1.44
Femur diameter (cm)	8.72	0.26	8.30	.15	6.41**
Waist diameter (cm)	49.30	1.37	69.01	1.80	4.28**
Calf Circumference (cm)	32.14	1.58	31.54	1.18	1.73
Subscapular skinfold (mm)	10.65	1.51	11.13	1.43	1.86
Calf Skinfold (cm)	12.05	.99	12.36	.96	1.11
Body fat %	18.91	1.86	19.26	1.62	1.12
Lean body mass %	81.05	1.91	80.69	1.65	1.12

\*Significant at 0.05 level

\*\* Significant at 0.01 level

Table 2 Shows that the Softball playing girls significantly differ on the different components of Somatotyping. Softball players have 3.17-4.11-2.51 somatotype rating as compare to Non-Softball girls 3.37-3.84-2.88. It showed that Softball

players were significantly more endomorphic (t- value = 3.78  $p<0.01$ ). However no significant difference was observed in Mesomorphy and Ectomorphy components between two groups.

**Table 2:** Descriptive Statistics of Various Somatotype Components in Softball players and Non-Softball girls age 18-20 Yrs

Components	Softball players N=30		Non-softball players N=30		'T' Value
	M	SD	M	SD	
Endomorphy	3.17	.29	3.37	.30	3.78**
Mesomorphy	4.11	7.89	3.84	1.62	1.50
Ectomorphy	2.51	1.05	2.88	1.27	1.50

\*Significant at 0.01

It is completed from the above result that there was no much difference between Softball playing and Non-playing girls in terms of Physical Performance. Schedule physical work might be the reason that change completely the body individuality and accordingly improve the performance of Non-Softball playing girls existing in rural area.

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